

**In the Claims:**

1. (currently amended) A method of treating an area of interest, the method comprising:  
delivering a first therapeutic application to an area of interest of a patient based on an  
initial prescription;

automatically monitoring one or more factors external to~~exclusive of a position of~~ said  
area of interest[[,]] that could affect the effectiveness of said initial prescription;

automatically modifying said initial prescription based on said monitoring of one or more  
factors; and

delivering a second therapeutic application to said area of interest of said patient based  
on said automatic modification of said initial prescription.

2. (original) The method of claim 1, wherein said area of interest includes a tumor.

3. (original) The method of claim 1, wherein said first therapeutic application comprises  
a dose of radiation delivered to said area of interest.

4. (cancelled)

5. (original) The method of claim 1, wherein said one or more factors comprise a stage  
of disease within said area of interest.

6. (original) The method of claim 1, wherein said one or more factors comprises a stage of treatment of said area of interest.

7. (cancelled)

8. (original) The method of claim 1, wherein said monitoring comprises laboratory testing of said patient.

9. (original) The method of claim 1, wherein said monitoring comprises physiological measurement of said patient.

10. (original) The method of claim 1, wherein said monitoring comprises clinical observation of said patient.

11. (previously presented) The method of claim 1, wherein said one or more factors comprises changes in applying said first and second therapeutic applications due to unscheduled breaks in said method of treating said area of interest.

12. (previously presented) The method of claim 1, wherein said automatic monitoring is

performed during said delivering of said first therapeutic application.

13. (previously presented) The method of claim 1, wherein said automatic monitoring is performed after said delivering said first therapeutic application and prior to said delivering said second therapeutic application.

14-15. (cancelled)

16. (previously presented) The method of claim 1, further comprising defining said first therapeutic application by defining clinical intent, goals and constraints of said method of treating said area of interest.

17. (currently amended) A method of active therapy redefinition, comprising:  
performing a diagnosis process on a patient;  
automatically delivering a first dose of therapeutic radiation to an area of interest of said patient based on said diagnosis process;

automatically monitoring one or more factors that could affect effectiveness of said automatically delivering said first dose of therapeutic radiation to said area of interest of said patient based on said diagnosis process, wherein said automatic monitoring of one or more factors is performed ~~exclusive of a position of~~ external to said area of interest;

automatically calculating a second dose of therapeutic radiation based on said  
automatically monitoring one or more factors; and  
automatically delivering said second dose of therapeutic radiation to said area of interest  
based on said automatic calculation.

18. (original) The method of claim 17, wherein said diagnosis process comprises  
analyzing relevant information regarding a disease state and a condition of said patient.

19. (original) The method of claim 17, further comprising generating at least one image  
set relevant to said area of interest of said patient and applying said at least one image set to said  
performing said diagnosis process.

20. (original) The method of claim 17, wherein said performing said diagnosis process  
comprises performing decisions concerning the type and extent of disease within said area of  
interest.

21. (previously presented) The method of claim 19, further comprising:  
automatically performing a therapy prescription process that comprises said automatic  
calculation of said second dose of therapeutic radiation;  
wherein said performing said diagnosis process comprises performing decisions

concerning the type and extent of disease within said area of interest; and wherein value is added to said at least one image set and said value added to said at least one image set is used during performing said therapy prescription process.

22. (previously presented) The method of claim 21, wherein said automatic performance of said therapy prescription process comprises:

setting goals and constraints;

assigning goals and constraints; and

assessing goals and constraints for said therapy prescription process.

23. (original) The method of claim 21, further comprising generating a reference image set from said value added at least one image set, wherein said reference image represents a static image of said area of interest prior to any treatment of said area of interest.

24. (original) The method of claim 22, wherein said goals and constraints are selected from the group consisting of: total dose, dose per fraction, a fractionation schedule, identification of whether treatment is complete, definition of anatomical structures associated with a disease as well as organs that are not to be unduly irradiated and definition of an anatomical point to be irradiated to a required minimum dose.

25. (previously presented) The method of claim 17, wherein said automatic monitoring comprises laboratory testing of said patient.

26. (previously presented) The method of claim 17, wherein said automatic monitoring comprises physiological measurement of said patient.

27. (previously presented) The method of claim 17, wherein said automatic monitoring comprises clinical observation of said patient.

28. (original) The method of claim 23, further comprising: automatically generating a reference plan based on said reference image set, wherein said reference plan indicates what is dosimetrically expected for a first fraction of radiation and a total course of radiation delivery to said area of interest; and automatically generating a positional image set of said patient that includes information of an actual treatment isocenter.

29. (original) The method of claim 28, further comprising assigning goals and constraints to generate said modified therapy based on said positional image set.

30. (original) The method of claim 28, further comprising:  
comparing said positional image set with said reference image set; and

automatically modifying a position of said patient based on said comparing.

31. (original) The method of claim 28, further comprising:

automatically determining a positional plan from said positional image set, wherein said positional plan defines dose volume statistics;

automatically comparing said positional plan with said reference plan so as to automatically generate a modified reference plan.

32. (currently amended) The method of claim 17, wherein said one or more factors are selected from the group consisting of: 1) ~~anatomical and physiological variations within said area of interest~~, 2) a stage of disease within said area of interest; 3) 2) a stage of treatment of said area of interest and 4) 3) changes in applying said first and second doses of therapeutic radiation due to unscheduled breaks in said method of active therapy redefinition.

33. (new) The method of claim 1, wherein the first therapeutic application occurs during a first session of a treatment plan and the second therapeutic application occurs during a subsequent session of the treatment plan.

34. (new) The method of claim 17, wherein the first therapeutic application occurs during a first session of a treatment plan and the second therapeutic application occurs during a

subsequent session of the treatment plan.